BAGGI®

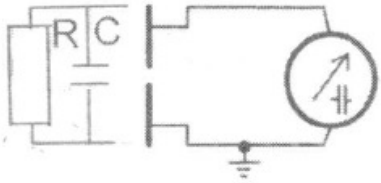
SENSEVOLUTION®
Industrial measurement & analysis solutions

BASE BA-SICI
Salt In Crude Online Analyzer
(Insertion measurement probe)

The BAGGI BA-SICI is part of the **BAGGI BASE® Instruments Series**. They are the result of combining the latest state-of-the-art-technology with over 50 years of industry experience.
The BA-SICI is an online process analyzer for continuous, reliable and accurate measurement of the concentration of salt in crude oil. It is also available for operation in an explosive atmosphere (**ATEX**) environment. The measuring probe is inserted into the oil vessel.

There are crude oils with high levels of chloride (salt) concentration. These oils must be transported and refined, while the high salt concentration can originate problems if it is neglected. To use effectively the desalters, it is necessary a quick and accurate measurement of the concentration. This goal can be achieved by the immediate response of an on-line process analyzer.

The offered instrument is based upon high frequency electromagnetic signals absorption and frequency shift by the liquid (oil + water + salt). The antenna of a high frequency band EM generator, inserted in the oil tank, transmits energy into the liquid; please refer to the figure. The resulting electromagnetic field (modelled by the RC circuit) will change according to the oil/water/salt content of the fluid. The dielectric loss resistance (R in the figure) will reduce for fluid with salt content. Due to the dipole character of water molecules, liquid water has a very high relative dielectric constant (C in the figure) in comparison with dry crude oil. The measurement of the C capacity, by the frequency shift of the EM signal, gives a value that is function of the water and salt content. The application software performs the temperature compensation and all the necessary data processing for calculating the salt concentration.



The BASE® Series embedded computer is the heart of the system.
The computer collects the signals from the above sensor(s) and is in charge of:

- Calculating the salt concentration
- Transmitting the concentration value over 4…20 analog mA signals
- Actuating the output relays for indicating possible alarms
- Displaying the measurement data in a Graphical User Interface (GUI)
- Archiving the measurement data in Microsoft Office compatible format
- Interfacing the human operator for system configuration and alarm reporting

When required, the analyzer is delivered in an ATEX version.
In this case the computer, together with the power supply, is within a pressurized enclosure provided with a protective purge system and a Vortex cooler (connected to the plant instrument air system).

ATEX compliance of the computer:
- II 2 G Ex px II T6
- II 3 G Ex pz II T6

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As the measuring probe (antenna) is inserted directly into the oil vessel, there is no need of a dedicated sampling loop, nor of a sample cell. This allows a very fast response time and maintenance is reduced to a minimum.
It should be noted that the range of salt concentration can be up to 30% by weight.

Specifications	
Salinity range	0 to 30% by weight
Accuracy - Instrument	+/- 2% (due to electronics and algorithms)
Accuracy - Overall	+/- 5% typical Function of instrument calibration; optimized by BAGGI by fine tuning during in-field commissioning
Process temperature	Standard: 0°C ÷ 85°C (32°F ÷ 185°F) High-Temp: 0°C ÷ 200°C (32°F ÷ 392°F)
Process pressure	Standard 20 Bar (300 psig)
Process connection	1" NPT Seal Housing
Sensor length	Minimum: 0.3 m (11.8 in) Standard: 1.2 m (47.2 in) Maximum: 6.0 m (236.2 in)
Sensor material	316L Stainless Steel; Ni-Span C; Hastelloy C22
Sensor ATEX classification	II 1G EEx ia IIB T4 II 1G EEx ia IIC T5
Controller input/output (configured according to the application)	- Analog input: four inputs filtered with transient protection - Analog output: three isolated outputs, 4 – 20 mA (standard) - Analog output: three additional isolated outputs (optional) - Digital input: six digital inputs (optional) - Digital output: four isolated relay signals (alarm and warning) - Digital output: four additional relay signals (optional) - Serial line: RS-232/RS-422/RS-485 with Modbus/Profibus/FieldbusFoundationProtocol - Ethernet card: two 10/100 mbps with RJ-45 port - One integrated WiFi card 11 Mbit/s
Controller environmental conditions	- 0 °C to 40 °C (32 °F to 104 °F) - 0 °C to 55 °C (32 °F to 131 °F) with vortex cooler
Controller enclosure protection	IP66
Compliances	- EN 61326, EN 61010-1
Controller ATEX classification (optional)	- II 2 G Ex px II T6 - II 3 G Ex pz II T6
Power	90-264 VAC, 47-63 Hz; 6A max
Controller dimensions/weight	- Wall Mount: 500mm H x 400mm W x 250mm D (19.68" H x 15.74" W x 9.84" D) - Weight: 15 Kg approx.

All the specifications subject to change without notice

For specific requirements, please contact the e-mail address below:
baggi@baggi.com

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